

WHAT IS CLAIMED IS:

1. An illumination system comprising:

a light source;

a first cylindrical lens array including a plurality of first cylindrical lens cells which divide light emitted from the light source into a plurality of beams;

a second cylindrical lens array including a plurality of second cylindrical lens cells which combine the beams divided by the first cylindrical lens cells in a same direction; and

a relay lens which relays the beams combined by the second cylindrical lens cells so that a majority of the beams concentrate on an incident light axis to have a Gaussian distribution.

2. The illumination system of claim 1, further comprising:

a first cylinder lens which is disposed between the light source and the first cylindrical lens array, and converges the light emitted from the light source; and

a second cylinder lens which is disposed between the first and second cylindrical lens arrays or behind the second cylindrical lens array, and collimates incident light.

3. The illumination system of claim 1, wherein the first and second cylindrical lens cells are arranged in a direction perpendicular to a thickness direction of the first and second cylinder lenses.

4. The illumination system of claim 1, further comprising a polarization conversion system which is disposed on a light path between the first cylinder lens and the relay lens, and converts incident light into light having a single polarization.

5. A projection system comprising:

- an illumination system;
- a color separator which separates light emitted from the illumination system into a plurality of color beams;
- a scrolling unit which scrolls the color beams obtained by the color separator; and
- a light valve which processes the color beams scrolled by the scrolling unit to form a color image,

the illumination system comprising:

- a light source;
- a first cylindrical lens array including a plurality of first cylindrical lens cells which divide light emitted from the light source into a plurality of beams;
- a second cylindrical lens array including a plurality of second cylindrical lens cells which combine the beams divided by the cylindrical lens cells in a same direction; and
- a relay lens which relays the beams combined by the second cylindrical lens cells so that a majority of the beams are concentrated on an incident light axis to have a Gaussian distribution.

6. The projection system of claim 5, wherein the illumination system further comprises:

a first cylinder lens which is disposed between the light source and the first cylindrical lens array, and converges the light emitted from the light source; and

a second cylinder lens which is disposed between the first and second cylindrical lens arrays or behind the second cylindrical lens array, and collimates incident light.

7. The projection system of claim 5, wherein the color separator comprises:

a first dichroic filter which reflects a first color beam of light emitted from the illumination system, and transmits other color beams; and

a second dichroic filter which reflects a second color beam of the color beams transmitted by the first dichroic filter, and transmits a third color beam.

8. The projection system of claim 5, wherein the scrolling unit comprises a plurality of prisms rotatably disposed on light paths along which the color beams travel, and color scrolling is achieved by rotations of the prisms.

9. The projection system of claim 5, further comprising slits which are disposed on paths along which the color beams travel and which control the divergence angles of the color beams.

10. The projection system of claim 5, wherein the first and second cylindrical lens cells are arranged in a direction parallel to a color separation direction.

11. The projection system of claim 5, further comprising at least one light path changer which directs the color beams toward the light valve.

12. The projection system of claim 6, wherein the illumination system further comprises a polarization conversion system which is disposed on a light path between the first cylinder lens and the relay lens, and converts incident light into light having a single polarization.

13. A method of forming a color image on a light valve by separating light emitted from a light source into a plurality of color beams via a color separator and by scrolling the color beams via a scrolling unit, the method comprising:

processing the light emitted from the light source to have a Gaussian distribution in a color separation direction by combining the light emitted from the light source in a direction perpendicular to the color separation direction and concentrating a majority of the light on an incident light axis in the color separation direction; and

controlling a divergence angle of the light having a Gaussian distribution via a plurality of slits.

14. The method of claim 13, wherein the processing of the light emitted from the light source to have a Gaussian distribution comprises:

dividing the light emitted from the light source into a plurality of beams via a first cylindrical lens array including first cylindrical lens cells arranged parallel to one another in a color separation direction such that light incident upon the first cylindrical lens cells is divided into a plurality of beams;

combining the beams obtained by the first cylindrical lens array via a second cylindrical lens array including second cylindrical lens cells; and

concentrating a majority of the beams combined by the second cylindrical lens array on an incident light axis via a relay lens so that the light emitted from the light source has a Gaussian distribution in the color separation direction.

15. The method of claim 14, further comprising:

converging the light emitted from the light source on the first cylindrical lens array via a first cylinder lens; and

collimating the combined beams passed through the second cylindrical lens array via a second cylinder lens.

16. The method of claim 14, wherein the color separator comprises:

a first dichroic filter which reflects a first color beam of light emitted from the relay lens and transmits other color beams; and

a second dichroic filter which reflects a second color beam of the color beams transmitted by the first dichroic filter and transmits a third color beam.

17. The method of claim 16, wherein the scrolling unit includes first, second, and third prisms rotatably disposed on light paths along which the first, second, and third color beams travel, and color scrolling is achieved by rotation of the first, second, and third prisms.

18. The method of claim 13, wherein widths of the color beams are controlled in the color separation direction by adjusting the widths of the slits.

19. The method of claim 14, wherein the second cylindrical lens cells are arranged in a direction parallel to the color separation direction.

20. The method of claim 15, further comprising converting incident light into light having a single polarization via a polarization conversion system which is disposed on a light path between the first cylinder lens and the relay lens .